BREAK-EVEN POINT (BEP) ANALYSIS

OVERVIEW

* As a manager, one of the most important things you need to know is how much income your bowling center requires to break-even and/or stay at a predetermined profit or subsidy level.

* Break-even analysis is a useful management tool to gauge the effects of pricing decisions, and demand and costs on potential revenue. Using it, managers can estimate the total sales volume in dollars and/or units needed to cover total expenses plus any profit.

DEFINITION

* The Navy MWR definition of Break-Even Point is "The break-even point is the volume of business at which total fixed and variable direct and indirect costs and profit subsidy objectives equal total revenue."

FORMULA

* The BEP formula is as follows. It helps you find the value of income needed to reach your break-even point.

  Income plus Other Income (Amusements, Commissions, Sponsorships, etc. equals Fixed Direct Expense plus Variable Direct and Indirect Expenses plus Profit minus Subsidy.

ANALYSIS

* BEP analysis is **NOT** a substitute for in-depth costing studies of products and services or for marketing research (e.g., surveys, focus groups, etc.) but can be used with other approaches to develop or revise pricing or product alternatives and for budgeting purposes.

* Once you determine the BEP (the **science** of pricing), you can make decisions on pricing, staffing, and other key areas that impact your events and services (the **art** of pricing).

* BEP analysis is normally done using unit of sales figures. Substitute hourly, daily, weekly, monthly, or annual figures if a BEP is needed for another period of time.

* BEP can be used to evaluate existing events or programs or to project or estimate total revenue and/or units for

a new endeavor being planned. For new undertakings, you will have to use assumptions based on past usage patterns, prices, and costs for like or similar events or programs. With pertinent data and correct assumptions you can set prices or evaluate many facets of your bowling center.

PROCEDURE

Step 1 Determine the event or service (unit of sales) on which you want to conduct a Break-Even Point Analysis.

Step 2 Gather the resources, supplies and other materials necessary to conduct a BEP analysis.

Summary Operation Statement (It shows General and Administrative (G&A) revenue and expenses.

Department Operations Statement (Profit and Loss Statement)

Current schedule of prices, fees and charges for the event/product/program.

Patron usage data

Break-Even Point Analysis Work Sheet (See sample at the end of this module)

Calculator

Step 3 Complete the Break-Even Point Work Sheet for the selected event, product or service.

- Follow steps 4 through 10 to fill out the work sheet.

Step 4 Work Sheet Item Number 1 - List all NAF Fixed Expenses and total (e.g., labor, general and administrative [G&A], depreciation, etc.) Record the total as TOTAL A.

- Fixed expenses are those that are not directly affected by increases or decreases in volume or decreases in volume or that cannot be quickly adjusted to changes in volume.

- These fixed expenses are sometimes referred to as direct or overhead costs.

- Display these fixed expenses as a dollar amount. For example, some of the costs/expnses associated with this item:

Salaries and Wages (true cost)

Utilities

Minor property and supplies

Depreciation

Annual and Sick leave

G&A overhead expenses

Other variable indirect expenses

Other direct expenses that do not vary

Subsidy Amount **(Must be entered as a minus figure)**

Profit Amount desired.

NOTE: If the total of Fixed Expenses (TOTAL A) is a minus figure (because of a subsidy), change one or more of the fixed expenses to a variable and show as a percentage in Step 7 instead of a dollar amount here. Calculations will not work with a negative Fixed Expenses total in TOTAL A.

Step 5 Work Sheet Item Number 2 - List all sources of other income and total (e.g., commissions, amusement machines, etc.) Record the total as TOTAL B.

NOTE: Do **NOT** include Resale or Program revenue/ income here in this item. The Resale and Program income figures are the Break-Even results that you will calculate in Step 9.

For example, some of the income/revenue sources that are associated with this item:

Commissions

Commercial Sponsorships

Amusement machines

Cover charges, dues, service charges, etc.

Other additional funding sources

Step 6 Work Sheet Item Number 3 - Subtract TOTAL B from TOTAL A and enter the adjusted Fixed Expense Total here: Record the total as TOTAL C.

NOTE: If the adjusted Fixed Expense total (TOTAL C) is a minus figure (because of a subsidy), change one or more of the fixed expenses to a variable and show as a percentage in Step 7 instead of a dollar amount here. Calculations will not work with a negative Fixed Expenses total in TOTAL C.

Step 7 Work Sheet Item Number 4 - List all variable expenses below (as a percentage of income) and total (e.g., Cost of Goods Sold, net profit, G&A, etc.). Record this total as TOTAL D.

NOTE: If Total D = 100% or more, your expenses will always be higher than your income and you will never achieve break even. Change one or more of your variable expenses to fixed and show it as a dollar amount in Step 4 instead of a percentage here.

- Variable expenses listed her are expressed as a percent (%) of income.
- Variable expenses are those that can be expected to increase directly with each additional unit sold.

Examples of costs/expenses that should be recorded in this category include:

Cost of Goods Sold (COGS)

- It is important not to rely on arbitrary COGS percentages. A manager must develop a COGS percentage and pricing policy to attain the identified break-even point.

- This percentage must at least meet the published standards for the program.

Fees paid to Sports officials

Awards

Salaries and Wages (only use if you cannot compute fixed value)

Supplies

Laundry

Utilities

Profit desired

Program or Activity G&A expenses

MWR Fund overhead expenses

Subsidy level **(must be entered as a minus figure)**

Other direct expenses

Step 8 Work Sheet Item Number 5 - Enter TOTAL D below to calculate Fixed Expense Percentage (TOTAL E):

100 - _____ = _____ times .01 = _____
TOTAL D TOTAL E

Step 9 Work Sheet Item Number 6 - Enter TOTAL C and divide by TOTAL E in the formula to calculate the Income required to achieve Total Break-Even.

$_____ divide by _____ = $_____(Total Break-even)
TOTAL C TOTAL E TOTAL F

Step 10 Work Sheet Item Number 7 - Decide whether you want to determine the selling price or the number of customers required to achieve a Break-Even Point.

IF YOU KNOW:	THEN DIVIDE THE:	BY:	TO DETERMINE:
THE PROJECTED CUSTOMER COUNT	TOTAL BREAK-EVEN DOLLARS (TOTAL F)	THE PROJECTED CUSTOMER COUNT	THE NECESSARY SELLING PRICE
THE PROJECTED SELLING PRICE		THE PROJECTED SELLING PRICE	THE NECESSARY NUMBER OF CUSTOMERS

BREAK-EVEN POINT ANALYSIS WORK SHEET
Event or Service:

1. List all fixed expenses and total (e.g., labor, general and administration [G&A], depreciation, etc.):	**Fixed Expense**	**Amount**
	TOTAL A	**$**
2. List all sources of other income and total (e.g., commissions, amusement machines, etc.):	**Other Income**	**Amount**
	TOTAL B	**$**
3. Subtract TOTAL B from TOTAL A and enter the Adjusted Fixed Expense Total here:		**$_____ TOTAL C**
4. List all variable expenses below (as percent of income and total) (e.g., Cost of Goods Sold, Net Profit, G&A, etc.):	**Variable Expenses**	**% of Income**
NOTE: If TOTAL D = 100% or more, expenses exceed income.	**TOTAL D**	**%**

5. Enter TOTAL D below to calculate Fixed Expense Percentage (TOTAL E):

100 - _____ = _____ x .01 = _____
TOTAL D TOTAL E

6. Enter TOTAL C and divide by TOTAL E below to calculate Income:

$_____ / _____ = $_____ (TOTAL Break-Even)
TOTAL C TOTAL E TOTAL F

7. Compute Selling Price or Sales Volume required to break even.

a. Selling Price:

$_____ / _____ = $_____
TOTAL F Projected Customer Count SELLING PRICE

b. Sales Volume Required:

$_____ / _____ = _____
TOTAL F Planned Selling Price SALES VOLUME

NOTE: In Item No. 3, if the adjusted fixed expense total is a Minus (-) figure (because of subsidation), CHANGE one or more of the fixed expenses to a % and enter as a variable Expense in Item No. 4.

In Item No. 4, if the variable expense % exceeds 100%, then

CHANGE one or more of the variable expenses to a fixed Expense and enter the fixed expense $ figure in Item 1 above.